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SOME EXPERIMENTS WITH THE MASON FRUIT JAR.

By AGNES ANDERSON MURRAY.

IN the following brief discussion of the Mason fruit jar I have brought together some data that have been obtained not only in the Kansas food laboratory, but also in the Indiana state food laboratory.

We will take up first the question of volume. For years the housewife has considered Mason fruit jars as standards of volume. She has sent quart jars to the grocery store for vinegar, molasses and milk, thinking that in this way she was outwitting the wily, short-measuring grocer and obtaining a true quart. But investigation of the volume discloses the fact that the quart size is almost a half pint short measure, and the larger sizes short in proportion. It is impossible to estimate the total loss to the consumer that his uniform short volume of Mason jars has caused.

The original cover of the Mason jar was a zinc cap which screwed on, and which when used in connection with a rubber ring gave an air-tight seal.

It was found that this zinc cap was acted upon by the contents of the jar, and in many cases holes were eaten through the cap, the metal going into solution. We have at the University some jars covered with such zinc caps, which at one time contained vinegar. The caps are badly corroded and contain many holes. Analysis of the contents showed a high zinc content. An improvement over the plain zinc cap was one made with a glass or porcelain lining, and this is the type most commonly found on the market to-day. In this type only a small amount of metal comes in contact with the liquid. A later type is so arranged that the closure is made by placing the rubber ring on the edge of the glass neck in such a way that the closure is made not with the edge of the cap, but by the inside glass lining. This type is the White Crown.

Experiments were carried on at the Indiana station to determine the relative merits of the old and new caps. Seven jars were filled, in duplicate, with acid solutions of the following strengths: $\frac{1}{2}$ and 1 per cent phosphoric acid, $\frac{1}{2}$ and 1 per cent acetic acid, $\frac{1}{2}$ per cent tartaric acid, and $\frac{1}{2}$ and 1 per cent nitric

acid. The jars were inverted and allowed to stand six months. At the end of that period the following things were noted: condition of the cap, loss in volume, condition of solution, whether clear or turbid, and the presence of zinc. The following results were obtained:

I. On five out of seven jars the White Crown caps were in perfect condition. The outer rims of two caps were slightly corroded. All of the Mason caps were corroded.

II. There was no loss in volume in the jars sealed with White Crown caps. In five of the seven jars sealed with Mason caps there was a loss in volume. Two jars had completely evaporated, one had evaporated one-half, another three-fourths, and the fifth had a slight loss.

III. The solution in each of the jars sealed with White Crown caps was clear; while in two of the jars sealed with Mason caps the solution was decidedly turbid.

IV. Zinc was absent in each of the solutions in the jars sealed with White Crown caps and present in each of the solutions sealed with Mason caps.

The general conclusions are that the White Crown cap is superior to the Mason cap:

1. It does not permit the contents to come in contact with any metal.

2. It is more sanitary in that it is more easily cleaned. The whole surface is smooth.

3. It permits a tighter seal.